

---

---

मोपेड के लिये क्रैंक एवं  
चेन पहिये — विशिष्टि  
( पहला पुनरीक्षण )

**Crank and Chain Wheel  
for Moped — Specification**  
( *First Revision* )

ICS 43.140

© BIS 2019



भारतीय मानक ब्यूरो  
BUREAU OF INDIAN STANDARDS  
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI-110002  
[www.bis.gov.in](http://www.bis.gov.in) [www.standardsbis.in](http://www.standardsbis.in)

## FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Prime Movers, Transmission System and Internal Combustion Engines Sectional Committee and approval of the Transport Engineering Division Council.

This standard was first published in 1982. The first revision of this standard is being undertaken to update the standard and to incorporate latest technological advancement/development that has taken place in various fields.

The composition of the Committee responsible for the formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*).' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# *Indian Standard*

## CRANK AND CHAINWHEEL FOR MOPED — SPECIFICATION

( *First Revision* )

### 1 SCOPE

This standard covers requirements for cranks and chain wheels intended for starting and pedaling purposes of mopeds. The fitment is to the centre axle of the mopeds.

### 2 REFERENCES

The following standards contain provisions which, through in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
5517 : 1993	Steels for hardening and tempering ( <i>second revision</i> )
7283 : 1992	Hot rolled bars for production of bright bars and machined parts for engineering applications ( <i>third revision</i> )
7743 : 2006	Recommended practice for magnetic particle testing and inspection of steel forgings ( <i>first revision</i> )
11740 : 2014/ ISO 10190 : 2008	Motorcycle chains — Characteristics and test methods ( <i>first revision</i> )
<i>IS No.</i>	<i>Title</i>
513 (Part 1) : 2016	Cold reduced low carbon steel sheets and strips: Part 1 Cold forming and drawing purposes ( <i>sixth revision</i> )
513 (Part 2) : 2016	Cold reduced low carbon steel sheets and strips: Part 2 High tensile and multi-phase steel ( <i>sixth revision</i> )
1068 : 1968	Specification for electroplated coatings of nickel and chromium on iron and steel ( <i>third revision</i> )
2062 : 2011	Hot rolled medium and high tensile structural steel ( <i>seventh revision</i> )
2403 : 2014 / ISO 606:2004	Short-pitch transmission precision roller and bush chains attachments and associated chain sprockets ( <i>third revision</i> )
2500 (Part 1) : 2000/ ISO 2859-1 : 1999	Sampling inspection procedures: Part 1 Attribute sampling plans indexed by acceptable quality limit (AQL) for lot-by-lot inspection ( <i>third revision</i> )
3469 (Part 1 to 3) : 1974	Tolerances for closed die steel forgings ( <i>first revision</i> )

### 3 SHAPE AND DIMENSIONS

The recommended shape and dimensions are given in Fig. 1 to 3. The right pedal crank assembly is shown in Fig. 4. Where agreed to, the parameters given below may be as agreed to between purchaser and suppliers.

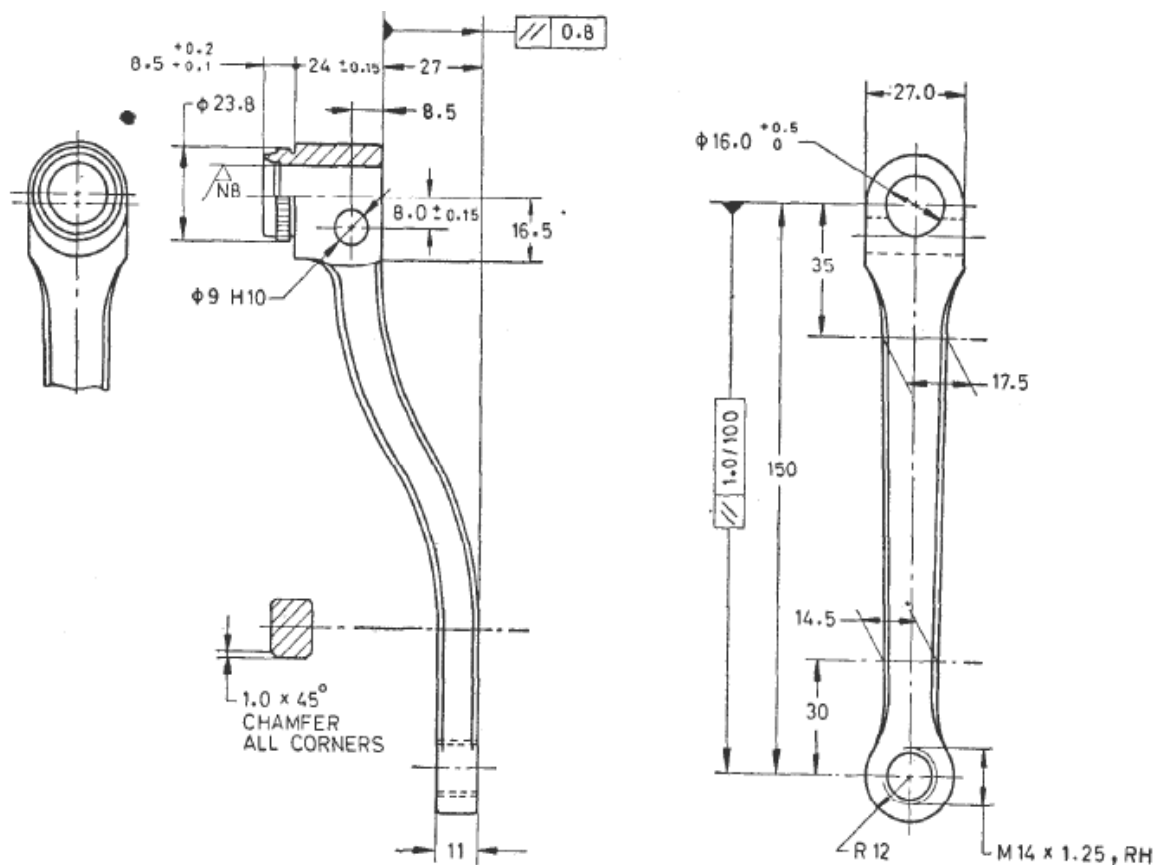
- a) Bent height of cranks,
- b) Radii of bends,
- c) Centre distance of the central axle hole and pedal axis,
- d) Pitch circle diameter of chain wheel,
- e) Number of teeth on chain wheel, and
- f) Design of serrations in right pedal crank corresponding to central hole of the chain wheel.

### 4 MATERIALS

The cranks shall be made from steel conforming to IS 5517 or IS 7283. The minimum ultimate tensile strength of steel for cranks shall be 550 N/mm<sup>2</sup> (55 kgf/mm<sup>2</sup>).

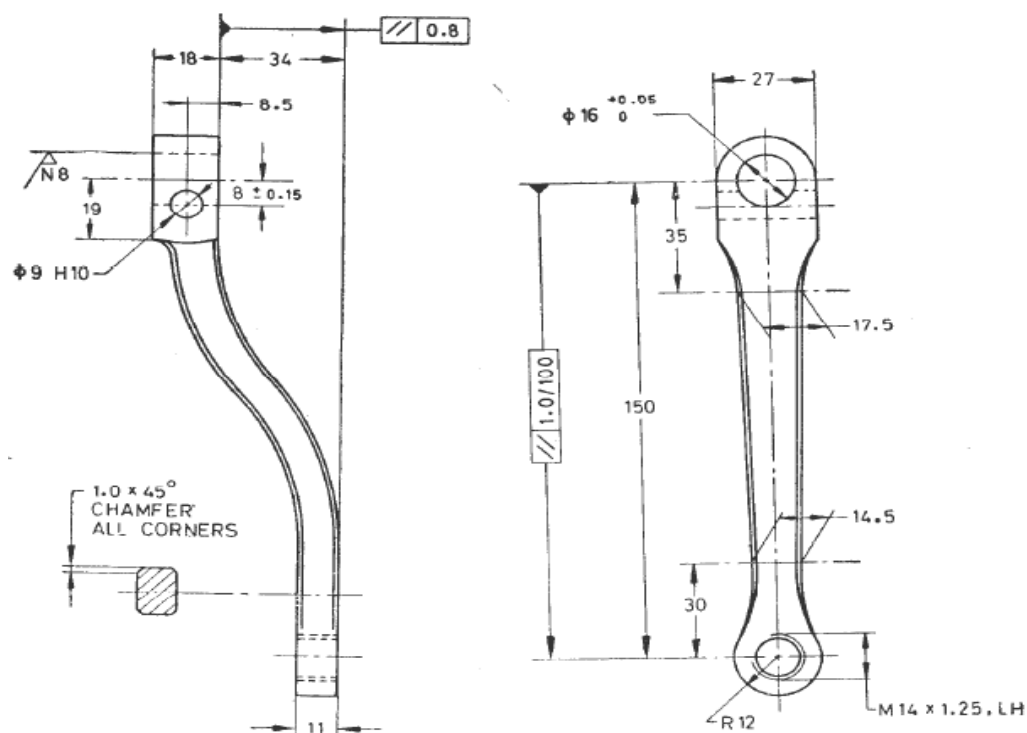
**4.1** The chain wheel shall be made of steel conforming to IS 2062 or IS 513 (Part 1) or IS 513 (Part 2).

In addition to minimum properties specified, the steel used for cranks and chain wheels shall be suitable for fabrication purposes.



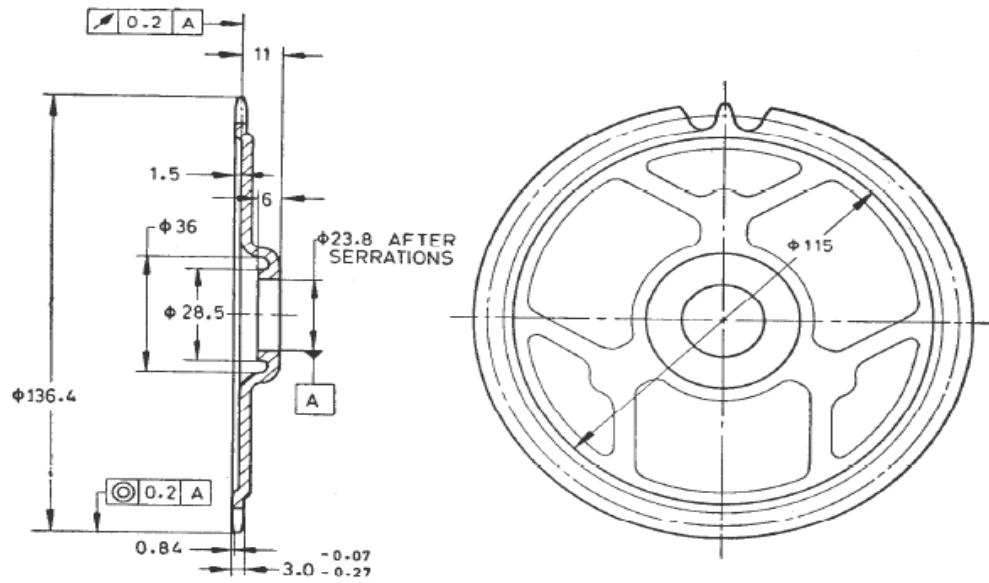
*All dimensions in millimetres*

FIG. 1 RIGHT HAND (RH) PEDAL CRANK



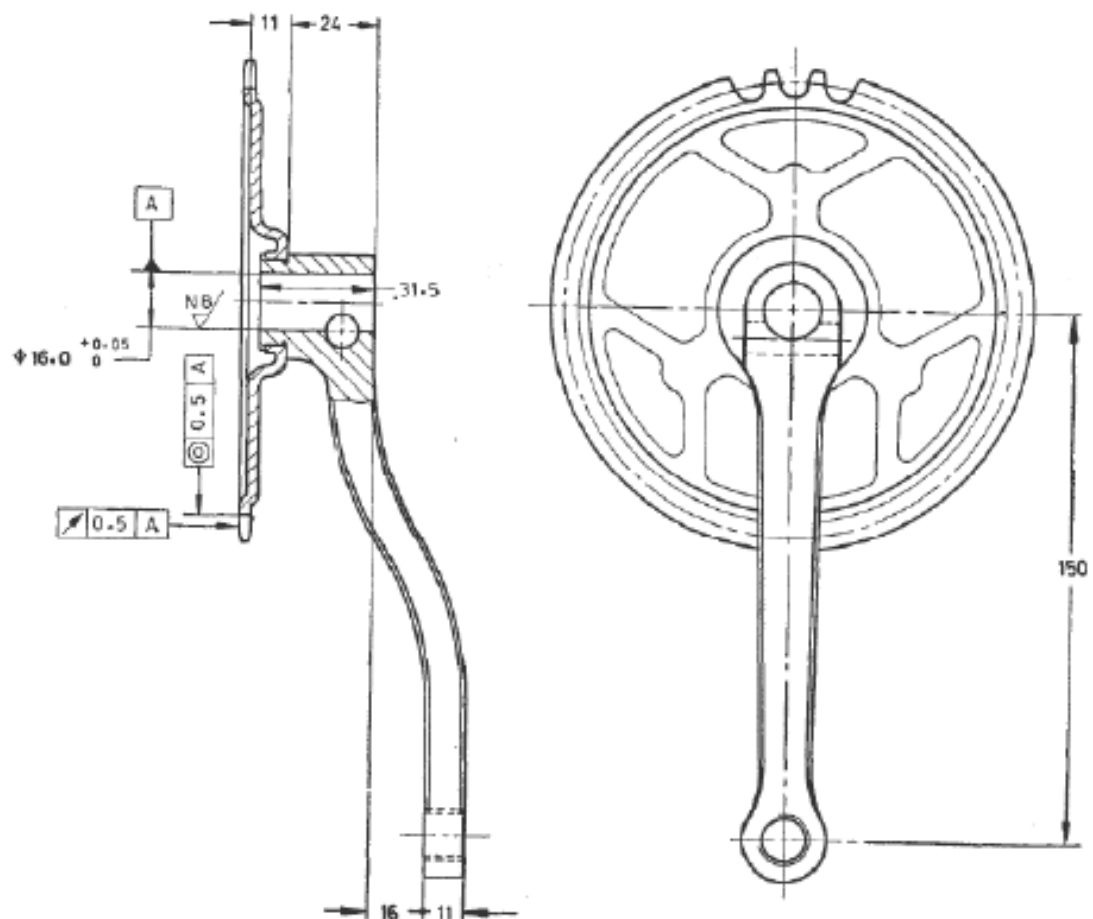
*All dimensions in millimetres*

FIG. 2 LEFT HAND (LH) PEDAL CRANK



All dimensions in millimetres

FIG. 3 DIMENSIONS FOR CHAIN WHEEL



Note — Bore  $\phi 16$  and Hole  $\phi 9.0$  are preferably to be finish machined after spinning of chain wheel.

All dimensions in millimetres

FIG. 4 RIGHT HAND PEDAL CRANK — CHAIN WHEEL ASSEMBLY

## 5 GENERAL REQUIREMENTS

The cranks shall have no forging defects, such as cracks, pits, scales, burrs, etc. The holes shall be smooth and square to the centre line of the crank and parallel. All sharp edges are to be rounded off by grinding.

**5.1** All forging dimensions shall be in accordance with tolerances specified in IS 3469 (Part 1 to 3).

**5.2** The chain wheels shall be true and in one plane concentric with the hole on the cranks for centre axis. The teeth shall be free from burrs, cracks or any other defects. The teeth profile shall be such as to suit chains conforming to IS 2403 or IS 11740.

## 6 FINISH

Cranks and chain wheels shall be nickel and chromium plated. The plating shall conform to service Grade No. 3 severe of IS 1068. The plating shall be uniform and free from all defects.

## 7 TESTS

**7.1** All forging defects shall be checked by non-destructive test methods as given in IS 7743.

**7.2** The crank and chain wheel assembly shall be tested as follows:

The assembly shall be rigidly fixed in a vertical plane having the crank horizontal. Through suitable means weight shall be applied on the hole for pedal spindle. The assembly shall sustain a weight of 2 224 N (227 kgf) without breaking at the joint, loosening or showing any sign of yielding.

**7.3** The electroplating requirements shall be tested in accordance with IS 1068.

## 8 PACKING

The cranks and chain wheels shall be packed in accordance with the best prevalent trade practice.

## 9 MARKING

**9.1** Shall be marked with manufacturers' name or trade-mark, model number, made in India, if required. Any other marking as per best prevalent trade practice may also be followed.

### 9.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

## 10 SAMPLING

**10.1** Unless otherwise agreed to between the supplier and the purchaser, the procedure as given in IS 2500 (Part 1) shall be followed for sampling inspection. The inspection level and sampling plan for various characteristics as given in **10.1.1** to **10.1.3** shall be followed.

**10.1.1** For the characteristics, dimensions, workmanship and finish the scale of sampling shall be corresponding to special inspection level S-4 given in Table 1 of IS 2500 (Part 1).

**10.1.2** For the characteristics given in **10.1.1**, the sampling plan shall be corresponding to Acceptable Quality Level (AQL) value of 1.5 percent given in Table 2-A of IS 2500 (Part 1).

**10.1.3** For tests the sampling plan to be followed shall be corresponding to Acceptable Quality Level (AQL) of 1.0 percent given in Table 2-A of IS 2500 (Part 1).

**ANNEX A***( Foreword )***COMMITTEE COMPOSITION**

Automotive Prime Movers, Transmission System and Internal Combustion  
Engine Sectional Committee, TED 02

<i>Organization</i>	<i>Representative(s)</i>
Automotive Research Association of India, Pune	SHRI N. V. MARATHE ( <b>Chairman</b> )
Ashok Leyland Ltd, Chennai	SHRI D. BALAKRISHNAN SHRI RAVI M. ( <i>Alternate</i> )
Association of State Road Transport Undertakings, New Delhi	SHRI R. CHANDRABABU SHRI ULLAS BABU ( <i>Alternate</i> )
Automotive Research Association of India, Pune	SHRI H. A. NAKHWA SHRI P. G. BHAT ( <i>Alternate</i> )
Automotive Component Manufacture Association, New Delhi	SHRI UDAY HARITE SEEMA BABAL ( <i>Alternate</i> )
Bajaj Auto Ltd, Pune	SHRI R. NARSIMHAN SHRI A. V. KUMBHAR ( <i>Alternate</i> )
BEML Limited, Mysore	SHRI MAHADEV NELLUR SHRI M. SASI KUMAR ( <i>Alternate</i> )
Bosch Limited, Bangalore	SHRI M. R. GOPALAKRISHNA
Central Institute of Road Transport, Pune	SHRI SAMIR SATTEGIRI SHRI V. V. JOSHI ( <i>Alternate</i> )
Central Pollution Control Board	SHRI A SUDHAKAR SHRI SUNEEL DAVE ( <i>Alternate</i> )
Controllerate of Quality Assurance Controller CQA (V), Ahmednagar	LT COL O. P. BHARTI ( <i>Alternate</i> )
CONCERT, Chennai	SHRI S. SAINATH SHRI MOHAN MAHADEVAN ( <i>Alternate</i> )
Cummins India Ltd, Pune	SHRI JUGAL K. MITTAL SHRI TUSHAR KADAM ( <i>Alternate</i> )
Eaton Industrial systems (P) Ltd	SHRI HEMANG RAVAL SHRI K. V. RAO ( <i>Alternate</i> )
Fleet guard filters (P) Ltd., Pune	SHRI ANAND G. DIWAN DR ASHOK KUMAR VAIKUNTAM ( <i>Alternate</i> )
Greaves Cotton Ltd (Diesel Engines Unit), Pune	SHRI SANDEEP CHAUDHARI DR KALEEMUDDIN SYED ( <i>Alternate</i> )
Hero Moto Corp Ltd, Dharuhera	SHRI PAWAN KUMAR SHRI ABHAY KUMAR ( <i>Alternate</i> )
Honda Siel Power Products Ltd, Gautam Budh Nagar	SHRI J. RAI SHRI S. K. CHAUBE ( <i>Alternate</i> )
Indian Diesel Engine Manufacturers Association (IDEMA)	SHRI PRASANTH RAVI
Indian Institute of Petroleum, Dehradun	DR S. K. SINGHAL SHRI NISHAN SINGH ( <i>Alternate</i> )
Indian Institute of Technology (IIT), New Delhi	DR S. P. SINGH DR SUDIPTO MUKHERJEE ( <i>Alternate</i> )
International Centre for Automotive Technology, Manesar	SHRI VAIBHAV PRASANTH YADAV MS VIJAYANTA AHUJA ( <i>Alternate</i> )

<i>Organization</i>	<i>Representative(s)</i>
Mahindra & Mahindra, Nasik	SHRI SHASHIKANT NIKAM SHRI S. SAKTHIVELAN ( <i>Alternate</i> )
Maruti Suzuki Ltd, Gurgaon	SHRI ANOOP BHAT
Ministry of Heavy Industries & Public Enterprises, New Delhi	SHRI SUSHIL LAKRA SHRI R. K. JAISWAL ( <i>Alternate</i> )
Ministry of Shipping, Road Transport & Highways, New Delhi	SHRI K. C. SHARMA
Ordinance Factory Board, Kolkata	SHRI S. K. GUND SHRI SURENDRA PATI ( <i>Alternate</i> )
Rajkot Engineering Association, Rajkot	SHRI JAYANT PITHWA SHRI CHINTAN R BHANDERI ( <i>Alternate</i> )
Shriram Pistons and Rings Ltd, Sahibabad	SHRI SHANKAR BRAHMA SHRI VINEET AHLUWALIA ( <i>Alternate</i> )
Society of Indian Automobile Manufacturers, New Delhi	SHRI P. K. BANERJEE SHRI ATANU GANGULI ( <i>Alternate</i> )
TATA Motors Ltd , Pune	SHRI M. J. PAGARE
Tractor Manufacturers Association, New Delhi	SHRI MADHAV BHADDE SHRI PHILIP KOSHY ( <i>Alternate</i> )
U.P. Diesel Engine Manufacturers Association, Agra	SHRI RAJESH GARG SHRI NARINDER SINGH ( <i>Alternate</i> )
Vehicle Research and Development Establishment, Ahmednagar	SHRI D. M. VAIDYA SHRI RUPESH KUMAR ( <i>Alternate</i> )
BIS Directorate General	SHRI R. R. SINGH, SCIENTIST 'E' AND HEAD (TED) [REPRESENTING DIRECTOR GENERAL ( <i>Ex-officio</i> )]

*Member Secretary*  
SHRI SHARAD KUMAR  
SCIENTIST C (TED), BIS





## Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 2016* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

## Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

## Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: TED 02 (12062).

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

## BUREAU OF INDIAN STANDARDS

### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002  
Telephones: 2323 0131, 2323 3375, 2323 9402

Website: [www.bis.gov.in](http://www.bis.gov.in)

### Regional Offices:

Telephones

Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 2323 7617 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg CHANDIGARH 160019	{ 265 0206 265 0290
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	{ 2832 9295, 2832 7858 2832 7891, 2832 7892

**Branches :** AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. COIMBATORE.  
DEHRADUN. DURGAPUR. FARIDABAD. GHAZIABAD. GUWAHATI.  
HYDERABAD. JAIPUR. JAMMU. JAMSHEDPUR. KOCHI. LUCKNOW.  
NAGPUR. PARWANOO. PATNA. PUNE. RAIPUR. RAJKOT. VISAKHAPATNAM.

Published by BIS, New Delhi